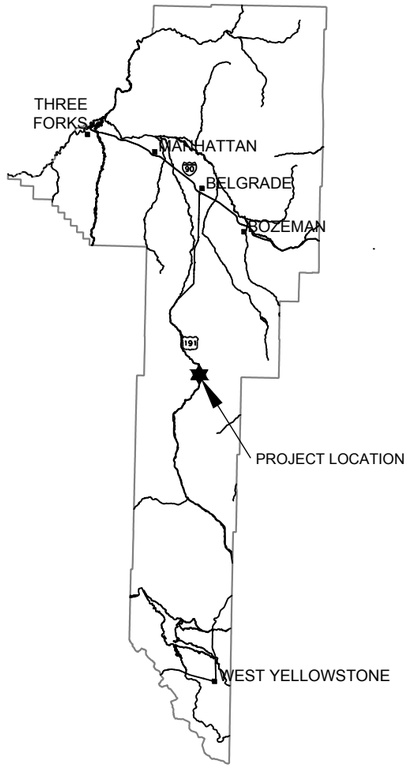
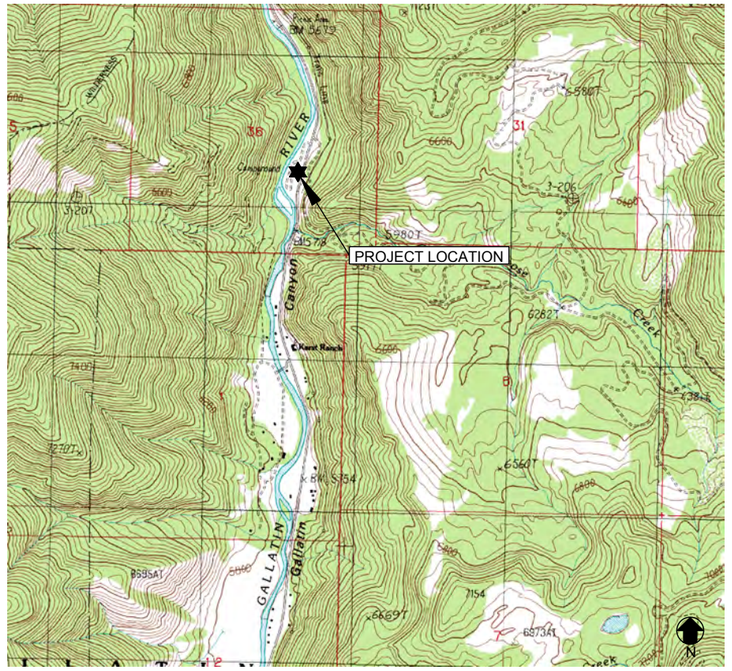
MOOSE CREEK FLAT
RIVER ACCESS IMPROVEMENT - PHASE 2

GALLATIN RIVER TASK FORCE
OCTOBER 2017
SITE 2 STREAMBANK BIOENGINEERING, SCHEDULE 1 - FINAL DESIGN
RIPARIAN PLANTING, SCHEDULE 2 - 90% COMPLETE
RESPEC PROJECT NO. 02870



GALLATIN COUNTY, MONTANA
N.T.S.

SHEET INDEX



VICINITY MAP
N.T.S.

REVIEWED:

FOREST ENGINEER _____ DATE _____

APPROVED:

DISTRICT RANGER _____ DATE _____

MATTHEW WYNN JOHNSON
REGISTERED PROFESSIONAL ENGINEER
STATE OF MONTANA NO. PEL-PE-LIC-32820
_____ DATE _____

RESPEC

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_COVER_P2.DWG
PLOT DATE: October 10, 2017 10:53 AM, BY: LIBBY ELLWOOD

3810 VALLEY COMMONS DR.
SUITE 4
BOZEMAN, MT 59718
PHONE (406) 284-2525

DESIGNED	JD/MJ/MR	
DRAWN	JR	
CHECKED	JD/MJ/MR	
DATE	10/2017	

REVISION

RESPEC

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GALLATIN RIVER TASK FORCE
PO BOX 160513
BIG SKY, MT 59716

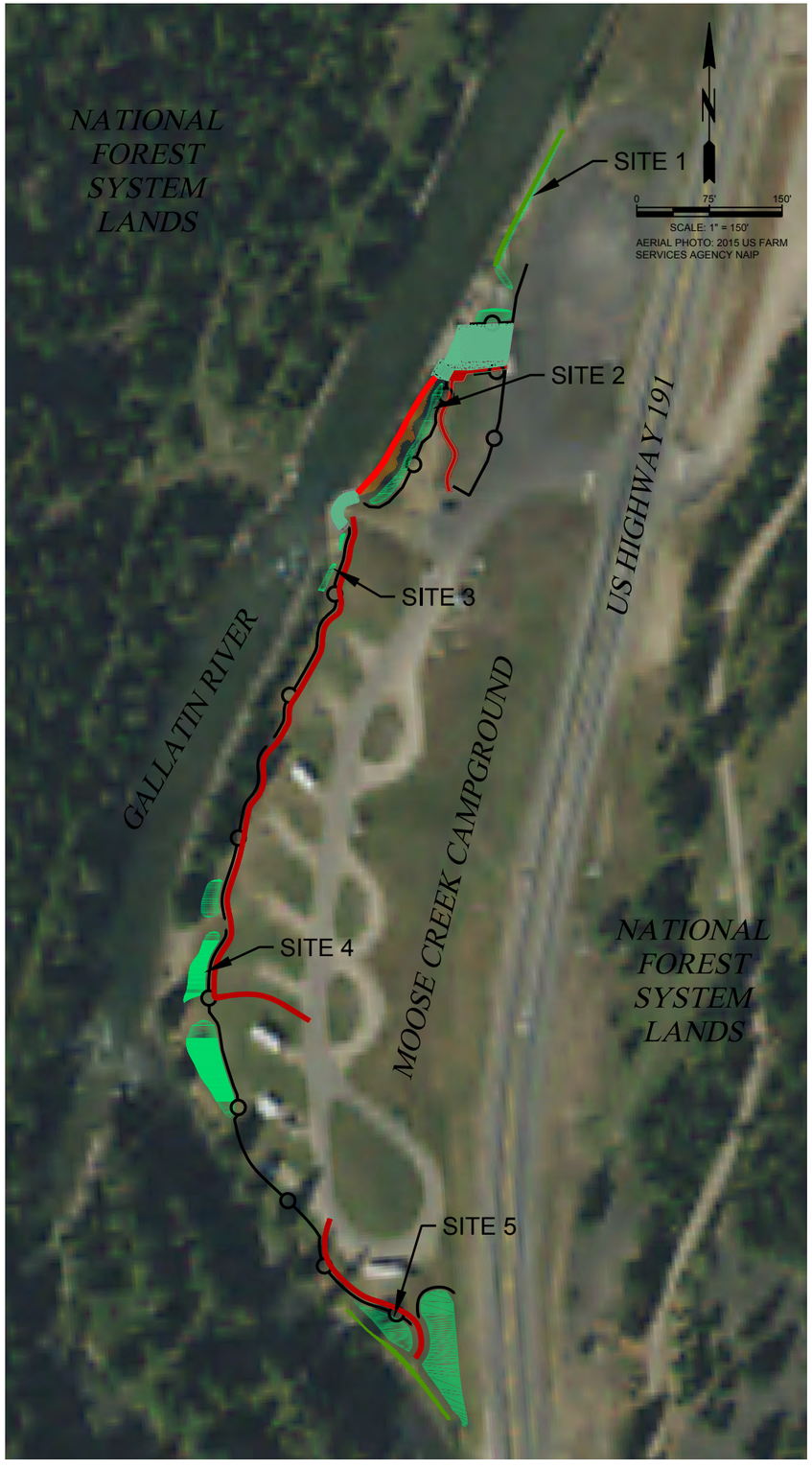
MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 2

COVER SHEET

SHEET NUMBER:
1
SHEET 1

GENERAL NOTES:

1. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND DETERMINE LOCATION OF ALL UNDERGROUND UTILITIES BEFORE COMMENCING WORK. **CALL 811** (OR ONE CALL UTILITY LOCATE: 1-800-424-5555) A MINIMUM OF 72-HOURS BEFORE WORK IS PLANNED. CONTRACTOR IS RESPONSIBLE FOR PROTECTING AND PROPERLY REPAIRING ANY AND ALL DAMAGED UTILITIES.
2. ANY UTILITY LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. ALL UTILITY LOCATIONS ARE SUBJECT TO THE ACCURACY OF THE LOCATION METHOD AND SUBJECT TO RELOCATION FROM THE TIME THAT THESE DRAWINGS WERE PREPARED.
3. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB, ON-SITE AT ALL TIMES.
4. 4. THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF ALL PERSONNEL, ALL SITE VISITORS, AND THE GENERAL PUBLIC WHO MAY BE AFFECTED BY THE CONSTRUCTION. THIS INCLUDES BUT IS NOT LIMITED TO GENERAL AND CHANNEL EXCAVATION, SHORING, TRAFFIC CONTROL, AND SECURITY.
5. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS FOUND BETWEEN THE CONSTRUCTION PLANS AND CONDITIONS ENCOUNTERED IN THE FIELD.
6. CONTRACTOR SHALL, UNLESS OTHERWISE DIRECTED, REPLACE ALL SIGNS, FENCES, CABLES, APPROACH DELINEATORS, OR OTHER FEATURES THAT MAY BE REMOVED TO ACCESS THE CONSTRUCTION AREA. CONTRACTOR SHALL VERIFY THE NATURE AND EXTENT OF ANY OF THESE FEATURES PRIOR TO BIDDING THE WORK. COST OF THIS WORK SHALL BE INCIDENTAL TO THE PROJECT UNLESS OTHERWISE STATED IN THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL COMPLY WITH ALL CONDITIONS AND RESTRICTIONS FOUND IN REGULATORY PERMITS OBTAINED BY THE ENGINEER.
8. LEGAL LOAD LIMIT REQUIREMENTS SHALL BE ADHERED TO ON ALL STATE HIGHWAYS, COUNTY ROADS, AND CITY STREETS.
9. THE CONTRACTOR IS TO PROVIDE HIS OWN WATER FOR COMPACTION AND DUST ABATEMENT.
10. CONSTRUCTION SHALL COMPLY WITH THESE PLANS IN ADDITION TO THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
11. ALL EQUIPMENT USED ONSITE WILL BE CLEAN, WASHED PRIOR TO ARRIVAL TO THE PROJECT AREAS.
12. EMERGENCY SPILL KITS WILL BE MAINTAINED ON EACH PIECE OF EQUIPMENT, OR IN AN AREA THAT CAN RAPIDLY BE REACHED.
13. FOR INSTALLATION OF STREAMBANK TREATMENTS, ALL WORK WILL BE DONE DURING LOW FLOWS.
14. STRUCTURAL BMPS, SUCH AS SILT FENCE, STRAW BALES OR WATTLES WILL BE USED TO ISOLATE CONSTRUCTION ALONG THE ACTIVE CHANNEL AS NECESSARY.
15. ALL EXPOSED SOILS WILL BE STABILIZED ONCE CONSTRUCTION IS COMPLETED, SOILS WILL BE STABILIZED USING VARIOUS TECHNIQUES AS DESCRIBED IN THIS PLAN INCLUDING, SEEDING, SOD TRANSPLANT AND PLANTING.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAVING AND PROTECTING ALL EXISTING TREES AND VEGETATION WHERE REMOVAL FOR CONSTRUCTION IS NOT MANDATORY.
17. IF WOUNDING OF SAVED TREES OCCUR, A NON-TOXIC WOUND DRESSING MUST BE APPLIED IMMEDIATELY. EXCAVATORS MUST HAVE A NON-TOXIC TREE WOUND DRESSING WITH THEM ON CONSTRUCTION SITES.
18. ALL EXCAVATED MATERIALS FROM STREAMBANK WILL BE PLACED IN AN AREA APPROVED BY THE ENGINEER.
19. ALL REMOVED ITEMS SHALL BECOME THE CONTRACTOR'S PROPERTY TO BE DISPOSED OF IN AN APPROVED MANNER IN ACCORDANCE WITH REGULATION BY THE OWNER AT NO ADDITIONAL EXPENSE TO THE OWNERS, UNLESS SPECIFIED WITHIN THE PLANS. NO CONCRETE, RUBBLE, OR EXTRA MATERIALS SHALL BE BACKFILLED ON SITE.
20. MATERIAL STOCK PILE AREAS, ACCESS ROUTES, AND EQUIPMENT STORAGE AREAS WILL BE IDENTIFIED PRIOR TO THE ARRIVAL OF CONTRACTOR HEAVY EQUIPMENT.
21. MATERIALS STORED ON THE SITE WHICH MIGHT CONTRIBUTE POLLUTANTS TO RUNOFF SHALL BE LOCATED IN AN ENCLOSED, COVERED, AND LOCKABLE CONTAINER. THESE MATERIALS ARE EXPECTED TO CONSIST MAINLY OF FERTILIZERS, FUELS, AND MACHINERY LUBRICANTS.
22. ALL EXISTING AND PROPOSED CONTOURS ARE LABELED IN FEET AND REFERENCE THE 1988 VERTICAL DATUM. ALL SLOPES ARE SHOWN AS DIAGRAMMATIC AND SHALL BE ROUNDED AT THE TOP AND BOTTOM.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP OF THE PROJECT SITE AND SURROUNDING AREAS ON A DAILY BASIS OF ANY TRASH OR MUD ON THE SITE OR ADJACENT CAMP SITES AS A RESULT OF CONSTRUCTION.
24. THE CONTRACTOR SHALL RESTORE ALL STAGING AND STOCKPILING AREAS TO THEIR ORIGINAL CONDITION OR BETTER THAN EXISTING UPON COMPLETION OF THE PROJECT. THE COST TO RESTORE THESE AREAS SHALL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
25. THE CONTRACTOR SHALL MAINTAIN ALL HAUL ROUTES AND RESTORE THEM TO THEIR ORIGINAL CONDITION OR BETTER THAN EXISTING UPON COMPLETION OF USE AT NO EXPENSE TO THE OWNER.
26. ALL PAVED HAUL ROUTES SHALL BE MAINTAINED FREE OF MUD AND DEBRIS RESULTING FROM CONSTRUCTION OPERATIONS.
27. THE CONTRACTOR SHALL MINIMIZE TRAFFICKING AND DISTURBANCE TO CAMPGROUND.
28. CONTRACTOR IS RESPONSIBLE FOR REPAIRING/REPLACING ALL DAMAGED INFRASTRUCTURE.
29. THE CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM ENGINEER.
30. THE CONTRACTOR SHALL CONTACT THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
31. ALL ESTIMATES OF QUANTITIES SHALL BE VERIFIED BY THE CONTRACTOR/SUBCONTRACTOR, WHO SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND PROVIDING THE WORK AND MATERIALS AS SHOWN ON THE PLANS.



3810 VALLEY COMMONS DR.
SUITE A
BOZEMAN, MT 59718
PHONE (406) 284-2525

DESIGNED	JD/MJ/MR
DRAWN	JR
CHECKED	JD/MJ/MR
DATE	10/2017

REVISION

RESPEC

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GALLATIN RIVER TASK FORCE
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 2

GENERAL NOTES AND
SITE OVERVIEW

SHEET NUMBER:
2
SHEET 2

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_COVER_P2.DWG
PLOT DATE: October 10, 2017 10:53 AM, BY: LIBBY ELLWOOD

SITE 1 - ADD WILLOWS USING STINGER AND SHRUB PLANTINGS	QUANTITY	UNIT	SCHEDULE
LIVE WILLOW CUTTINGS	160	EA	1
CONTAINERIZED PLANTINGS			
ENGELMANN SPRUCE - 2 GAL	3	EA	2
MOUNTAIN ALDER - 5 GAL	3	EA	2
WOLF WILLOW - 2 GAL	7	EA	2
WOODS ROSE - 1 GAL	5	EA	2

SITE 2 - STREAMBANK BIOENGINEERING	QUANTITY	UNIT	SCHEDULE
STREMBANK BIONEGINEERING			
LENGTH	145	FT	1
FILL (USE FILL GENERATED FROM RAMP CONSTRUCTION)	160	CUYD	1
GEOTEXTILE FABRIC - WOVEN COIR FABRIC - BioD70	161	SQYD	1
GEOTEXTILE FABRIC - NONWOVEN COI - BioOCF30	161	SQYD	1
TRIANGULAR STAKES	218	EA	1
BIODEGRADABLE TWINE (3/5" DIAMETER)	667	FT	1
STREAMBANK REVEGETATION MIX	0.04	AC	1
CONIFER BRUSH FASCINE	145	FT	1
LIVE WILLOW CUTTINGS	3,045	EA	1
CONTAINERIZED PLANTINGS			
BEBBS WILLOW - 5 GAL	12	EA	2
ENGELMANN SPRUCE - 2 GAL	3	EA	2
SANDBAR WILLOW - 5 GAL	33	EA	2
SHRUBBY CINQUEFOIL - TALL GAL	3	EA	2
SNOWBERRY - TALL GAL	12	EA	2
SUBALPINE FIR - 2 GAL	3	EA	2
WOLF WILLOW - 2 GAL	3	EA	2
WOODS ROSE - TALL GAL	8	EA	2

SITE 3 - ADD WILLOWS USING STINGER AND SHRUB PLANTINGS	QUANTITY	UNIT	SCHEDULE
CONTAINERIZED PLANTINGS			
MOUNTAIN ALDER - 5 GAL	3	EA	2
WOLF WILLOW - 2 GAL	8	EA	2

SITE 4 - CONIFER/SHRUB PLANTINGS	QUANTITY	UNIT	SCHEDULE
CONTAINERIZED PLANTINGS			
DOUGLAS FIR - 2 GAL	6	EA	2
ROCKY MOUNTAIN JUNIPER - 5 GAL	5	EA	2
SHRUBBY CINQUEFOIL - TALL GAL	3	EA	2
SNOWBERRY - TALL GAL	35	EA	2
SUBAPLINE FIR - 2 GAL	5	EA	2
WOODS ROSE - TALL GAL	31	EA	2

SITE 5 - ADD WILLOWS USING STINGER AND SHRUB PLANTINGS	QUANTITY	UNIT	SCHEDULE
LIVE WILLOW CUTTINGS	160	EA	1
CONTAINERIZED PLANTINGS			
DOUGLAS FIR - 2 GAL	4	EA	2
QUAKING ASPEN - TALL GAL	8	EA	2
ROCKY MOUNTAIN JUNIPER - 5 GAL	3	EA	2
SHRUBBY CINQUEFOIL - TALL GAL	2	EA	2
SNOWBERRY - TALL GAL	18	EA	2
SUBALPINE FIR - 2 GAL	3	EA	2
WOLF WILLOW - 2 GAL	3	EA	2
WOODS ROSE - TALL GAL	31	EA	2

SITE 1-5 - FENCING	QUANTITY	UNIT	SCHEDULE
POST AND RAIL FENCING	1,406	FT	3

CUYD = CUBIC YARD
EA = EACH
FT = LINEAR FOOT
SQFT = SQUARE FOOT
SQYD = SQUARE YARD

3810 VALLEY COMMONS DR.
SUITE 4
BOZEMAN, MT 59718
PHONE (406) 284-2525

DESIGNED JD/MJ/MR
DRAWN JR
CHECKED JD/MJ/MR
DATE 10/2017

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PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 2

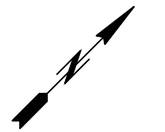
SUMMARY OF QUANTITIES

SHEET NUMBER: 3
SHEET 3

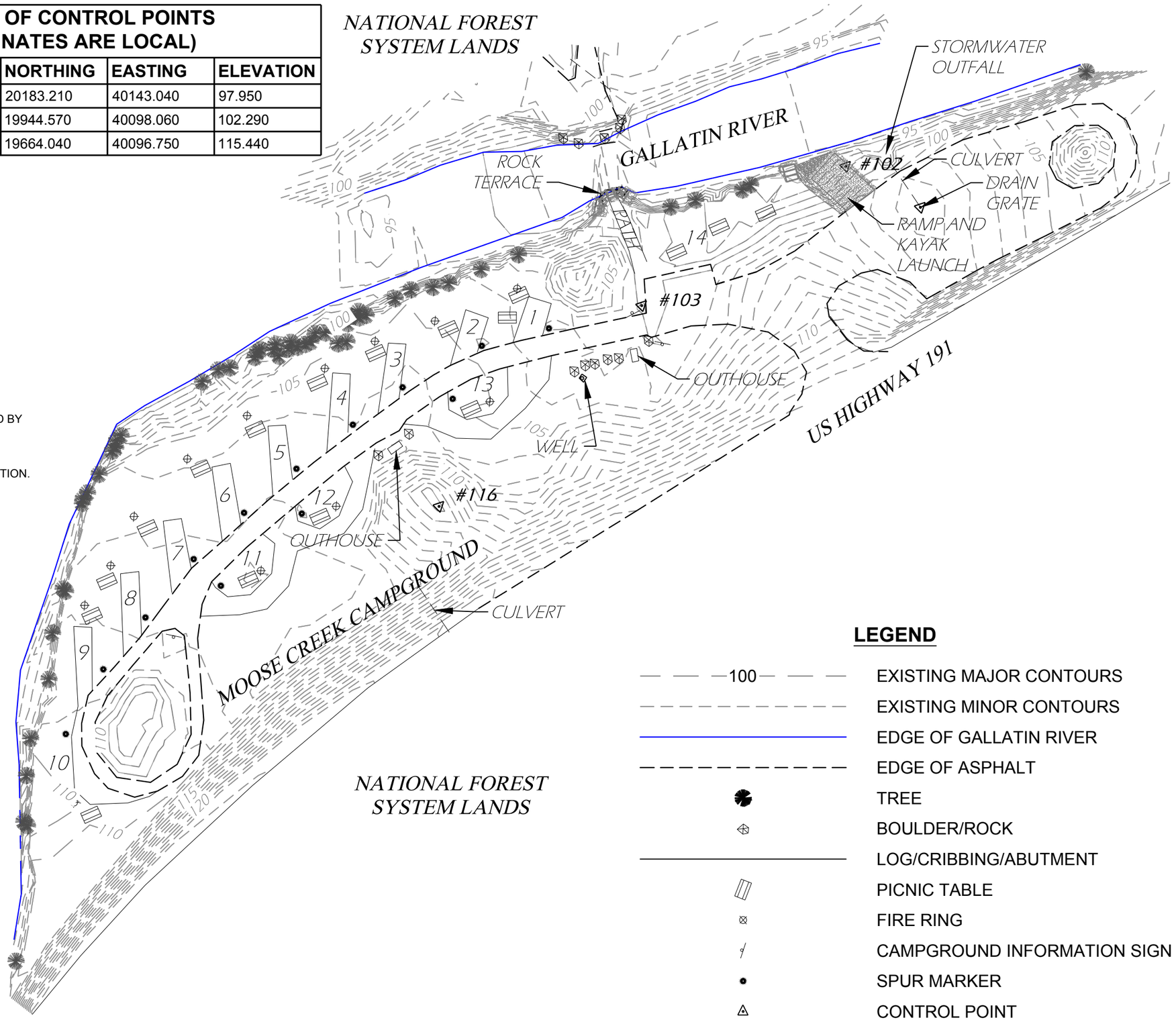
NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_COVER_P2.DWG
PLOT DATE: October 10, 2017 10:53 AM, BY: LIBBY ELLWOOD

COORDINATES OF CONTROL POINTS (ALL COORDINATES ARE LOCAL)

POINT	NORTHING	EASTING	ELEVATION
CONTROL PT. #102 (OBLITERATED)	20183.210	40143.040	97.950
CONTROL PT. #103	19944.570	40098.060	102.290
CONTROL PT. #116	19664.040	40096.750	115.440



NOTES:
1. TOPOGRAPHIC SURVEY PERFORMED BY USFS ON 10/14/2014 AND 11/19/2014.
2. CONTOURS AND BANK LOCATIONS SHOWN MAY NOT MATCH EXISTING CONDITIONS AT TIME OF CONSTRUCTION.



LEGEND

- 100 — EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EDGE OF GALLATIN RIVER
- EDGE OF ASPHALT
- TREE
- BOULDER/ROCK
- LOG/CRIBBING/ABUTMENT
- PICNIC TABLE
- FIRE RING
- CAMPGROUND INFORMATION SIGN
- SPUR MARKER
- CONTROL POINT

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_EXISTING_P2.DWG
PLOT DATE: October 10, 2017 10:54 AM, BY: LIBBY ELLWOOD

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DATE 10/2017

REVISION

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BOZEMAN, MT 59718
PHONE (406) 284-2525

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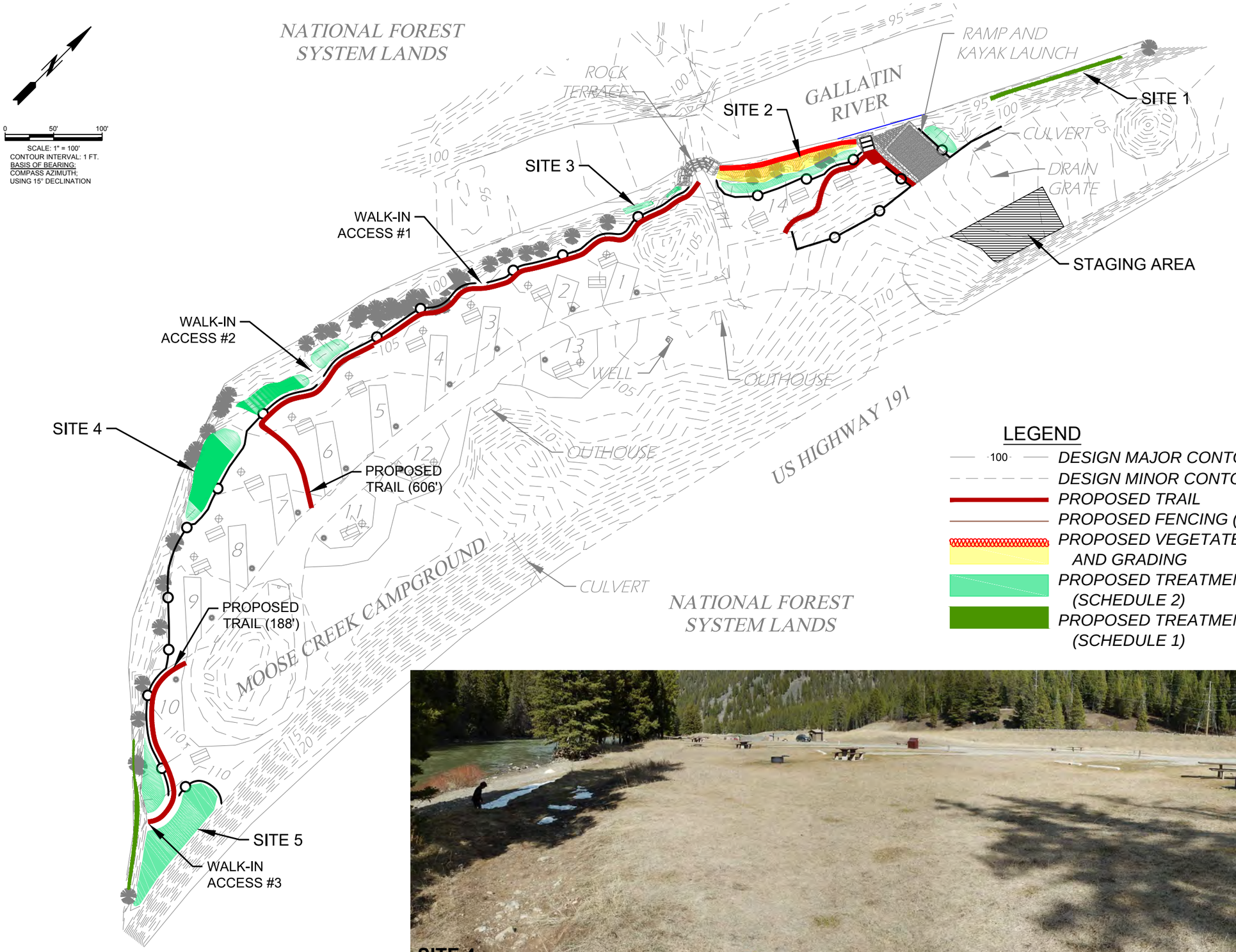
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 2

EXISTING SITE CONDITIONS

SHEET NUMBER: 4
SHEET 4



NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_OVERVIEW_P2.DWG
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DATE	10/2017

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MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 2

OVERVIEW OF PROPOSED TREATMENTS

SHEET NUMBER: 5
SHEET 5

GALLATIN RIVER

1.A

1.B

1.C

SHRUB PLANTING 0.01 AC

EDGE OF WATER AT LOW WATER (~500 CFS)

ORDINARY HIGH WATER MARK (~4620 CFS)

STORMWATER OUTFALL

POST AND RAIL FENCING

160'

45'

63'

95

100

105

RIPRAP

CONCRETE RAMP

CULVERT

DRAIN GRATE

SP

A

WW

WR

0 10' 20'

SCALE: 1" = 20'

BASIS OF BEARING:
COMPASS AZIMUTH;
USING 15° DECLINATION

LEGEND

- 100 DESIGN MAJOR CONTOUR
- DESIGN MINOR CONTOUR
- PROPOSED WILLOW PLANTINGS (SCHEDULE 1)
- PROPOSED SHRUB PLANTINGS (SCHEDULE 2)
- WW WOLF WILLOW PLANTING
- WR WOODS ROSE PLANTING
- A MOUNTAIN ALDER PLANTING
- SP ENDELMANN SPRUCE PLANTING

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_GRADING_P2.DWG
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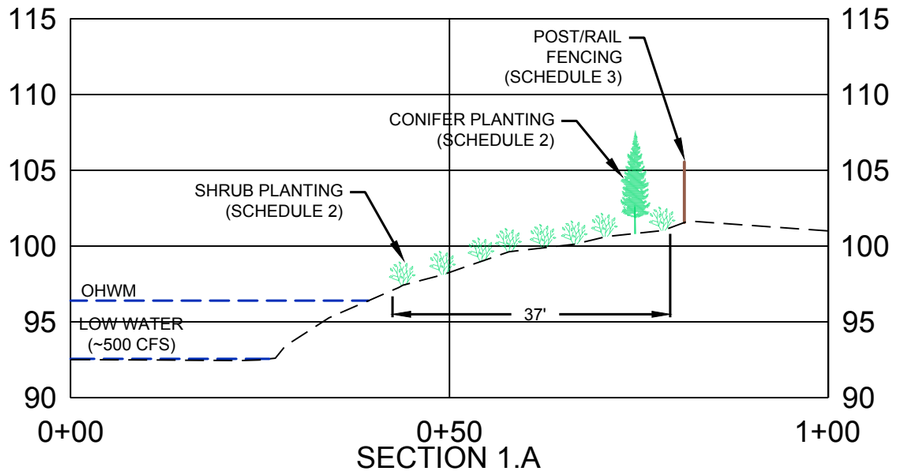
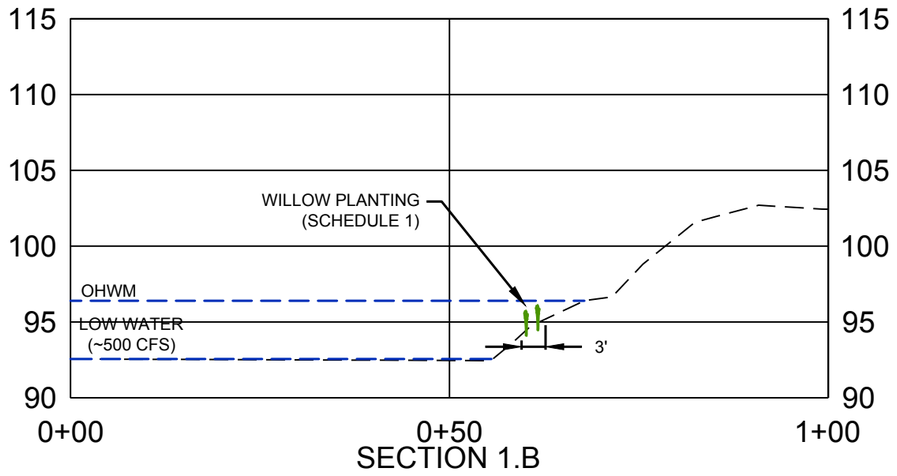
MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

SITE 1
WILLOW PLANTING

SHEET NUMBER:
6
SHEET 6



SECTION 1.A



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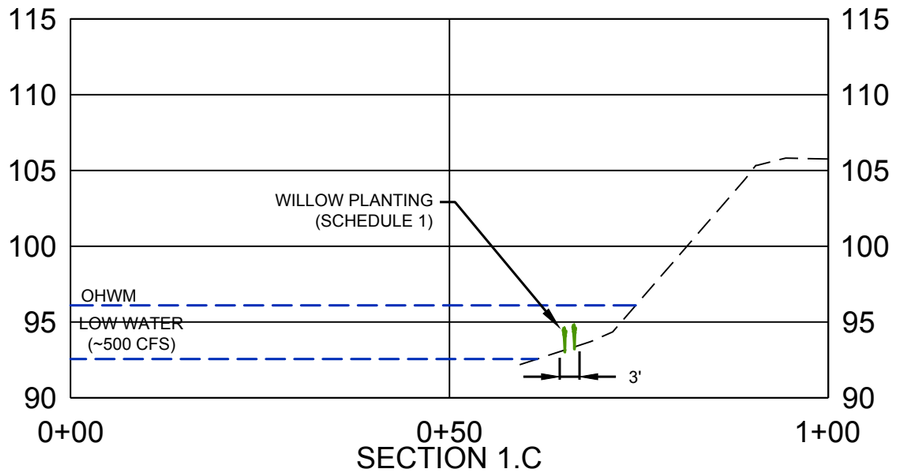
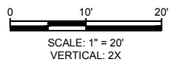


SECTION 1.C



LEGEND

- EXISTING GROUND
- WILLOW PLANTINGS (SCHEDULE 1)
- SHRUB PLANTINGS (SCHEDULE 2)
- CONIFER PLANTINGS (SCHEDULE 2)

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MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

SITE 1
WILLOW PLANTING

SHEET NUMBER:
7
SHEET 7

GALLATIN RIVER

EDGE OF WATER AT LOW WATER (~500 CFS)

ORDINARY HIGH WATER MARK (~4620 CFS)

KAYAK LAUNCH

2.A

2.B

2.C

2.D

2.E

2.F

2.G

2.H

FABRIC ENCAPSULATED SOIL LIFTS

145'

ROCK TERRACE AND STAIRS

CONIFER/SHRUB PLANTINGS 0.08 AC

POST AND RAIL FENCING

170'

PATH

TRAIL

RIPRAP

CONCRETE RAMP

33'

105

136'

POST AND RAIL FENCING

19'

SP

SF

SN

WR

WW

CI

LEGEND

- 100 — DESIGN MAJOR CONTOUR
- DESIGN MINOR CONTOUR
- PROPOSED FABRIC ENCAPSULATED SOIL LIFT
- LIMITS OF PROPOSED GRADING
- GRADING BELOW OHWM
- PROPOSED CONIFER/SHRUB PLANTINGS (SCHEDULE 2)
- CI SHRUBBY CINQUEFOIL PLANTING
- WW WOLF WILLOW PLANTING
- SF SUBALPINE FIR PLANTING
- SN SNOWBERRY PLANTING
- SP ENGELMANN SPRUCE PLANTING
- WR WOODS ROSE PLANTING
- SANDBAR AND BEBBS WILLOW PLANTING

0 10' 20'

SCALE: 1" = 20'

BASIS OF BEARING: COMPASS AZIMUTH; USING 15° DECLINATION

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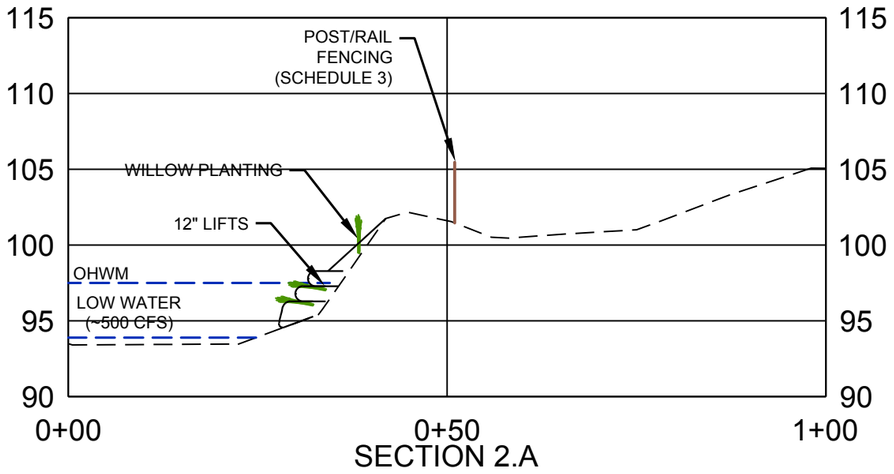
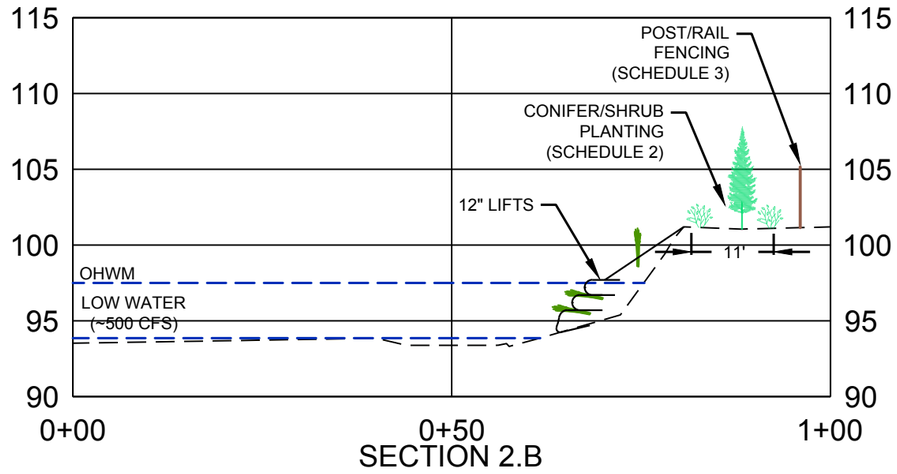
MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 1

SITE 2
STREAMBANK
BIOENGINEERING AND
CONIFER, SHRUB AND
WILLOW PLANTING

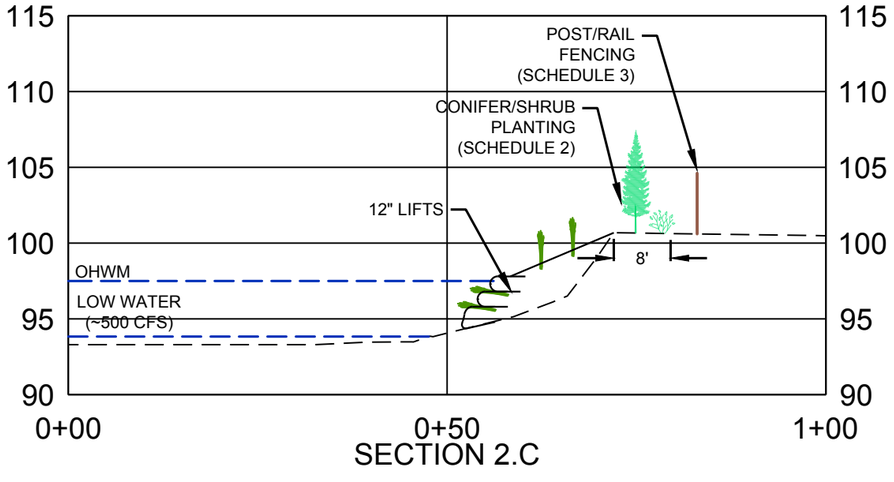
SHEET NUMBER:
8
SHEET 8



SECTION 2.A



SECTION 2.B



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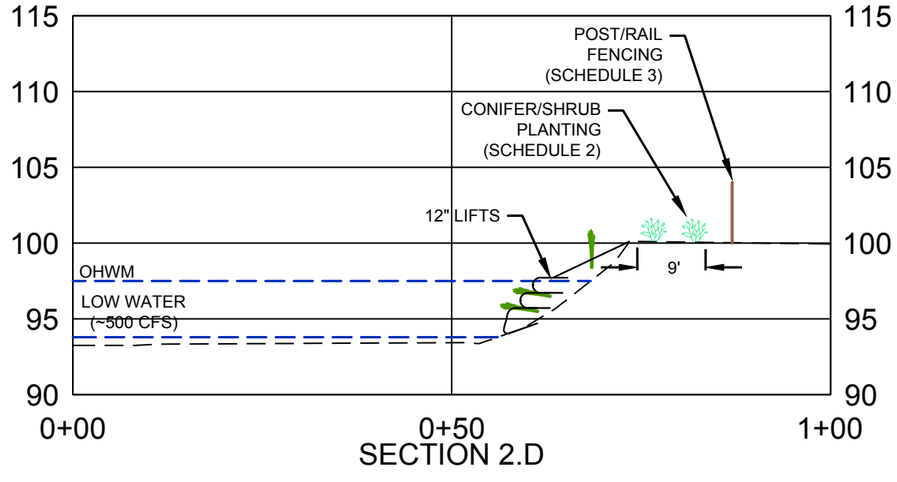

SECTION 2.D

LEGEND

- EXISTING GROUND
- DESIGN GROUND
- VEGETATED SOIL LIFT
- SHRUB PLANTINGS (SCHEDULE 2)
- CONFIER PLANTINGS (SCHEDULE 2)

0 10' 20'

SCALE: 1" = 20'
VERTICAL: 2X

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_GRADING_P2.DWG
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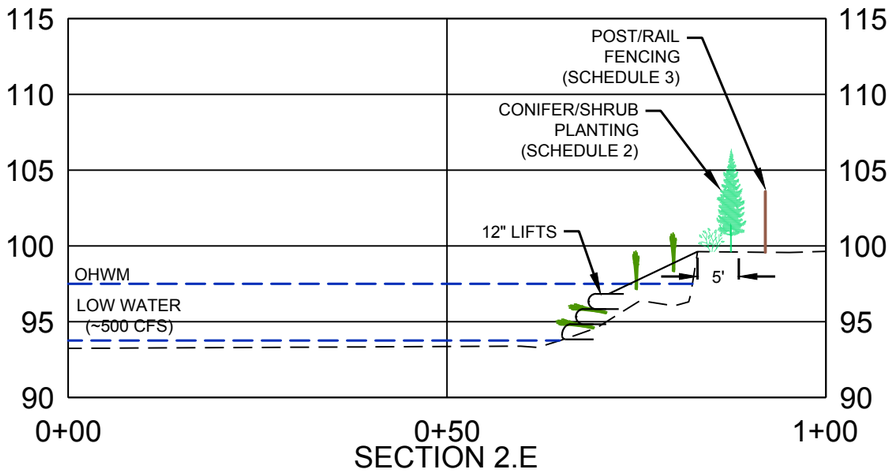
IMPROVEMENT -
PHASE 1

SITE 2
STREAMBANK
CONIFER, SHRUB AND
WILLOW PLANTING

SHEET NUMBER:
9
SHEET 9



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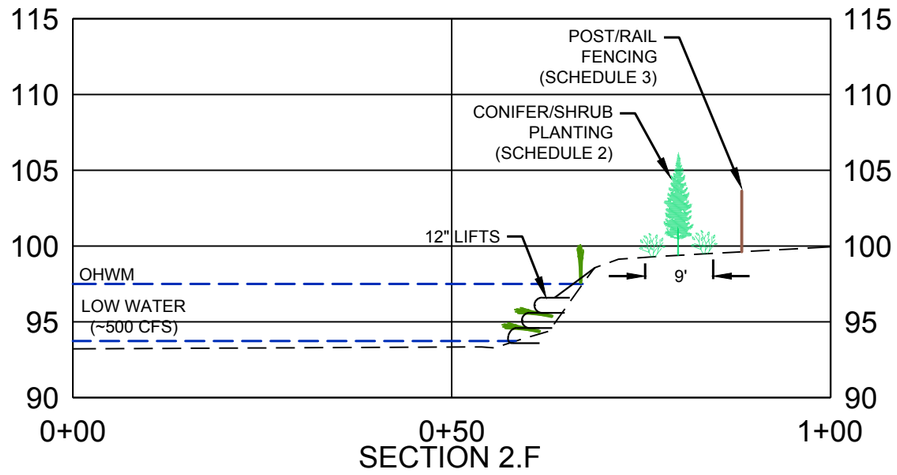

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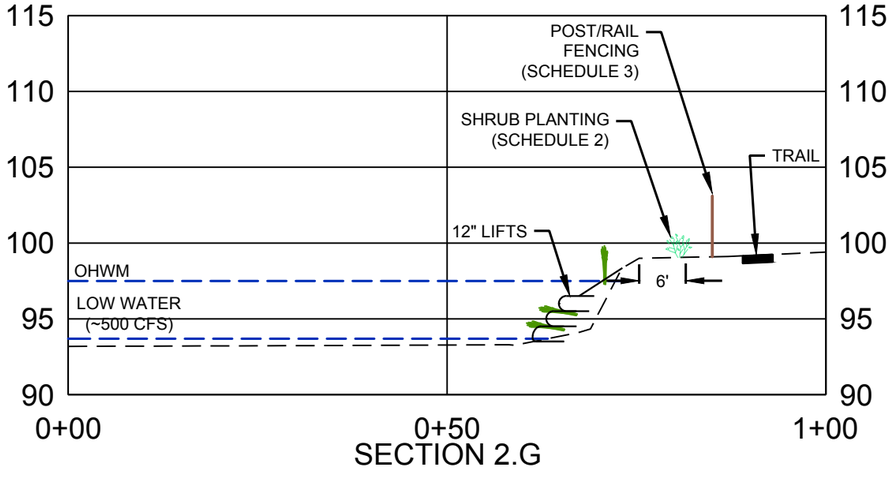

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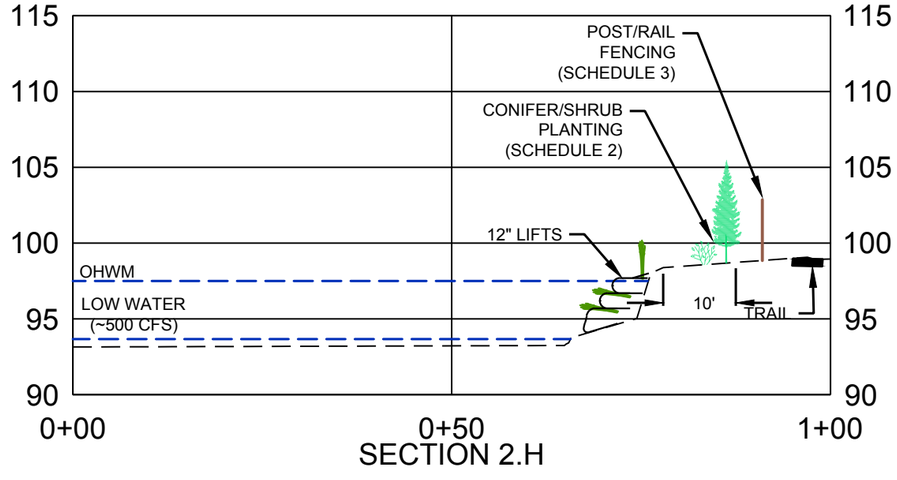

SECTION 2.H

LEGEND

- EXISTING GROUND
- DESIGN GROUND
- VEGETATED SOIL LIFT
- SHRUB PLANTINGS (SCHEDULE 2)
- CONFIER PLANTINGS (SCHEDULE 2)

0 10' 20'

SCALE: 1" = 20'
VERTICAL: 2X

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_GRADING_P2.DWG
PLOT DATE: October 10, 2017 10:55 AM, BY: LIBBY ELLWOOD

DESIGNED JD/MJ/MR
DRAWN JR
CHECKED JD/MJ/MR
DATE 10/2017

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MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT - PHASE 1

SITE 2
STREAMBANK
CONIFER, SHRUB AND
WILLOW PLANTING

SHEET NUMBER:
10
SHEET 10

GALLATIN RIVER

GALLAT

3.B

3.C

3.A

SHRUB
PLANTINGS
0.01 AC

ROCK
TERRACE
AND STAIRS

POST AND
RAIL FENCING

POST AND
RAIL FENCING

TRAIL

143'

82'

105

95

WALK-IN ACCESS #1

LEGEND

100 DESIGN MAJOR CONTOUR

DESIGN MINOR CONTOUR

PROPOSED SHRUB PLANTINGS (SCHEDULE 2)

A MOUNTAIN ALDER PLANTING

WW WOLF WILLOW PLANTING

0 10' 20'

SCALE: 1" = 20'

BASIS OF BEARING:
COMPASS AZIMUTH;
USING 16° DECLINATION

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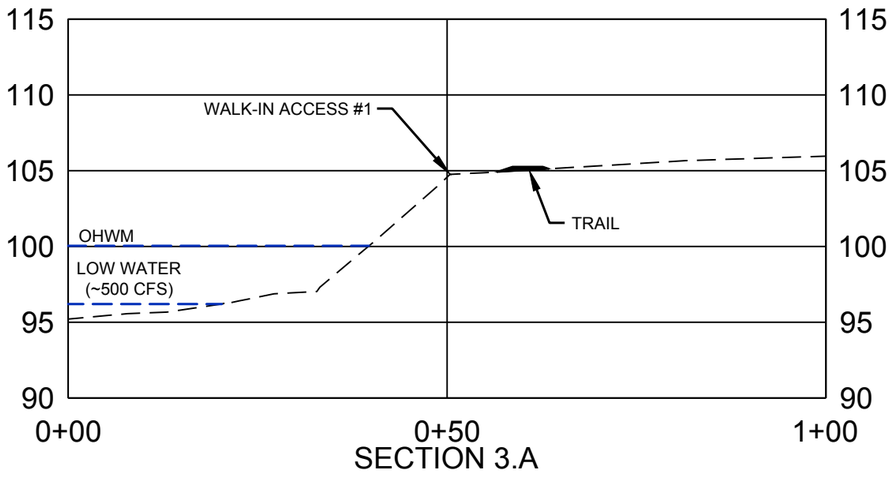
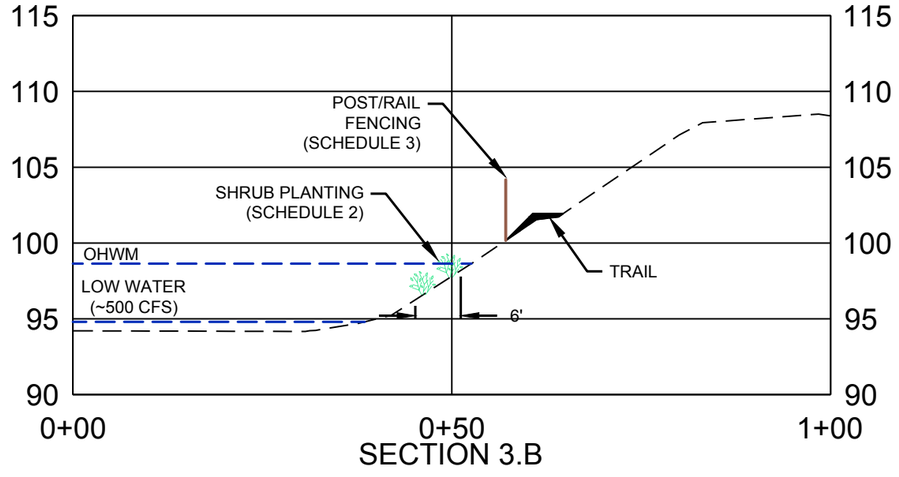
SITE 3
WILLOW PLANTING

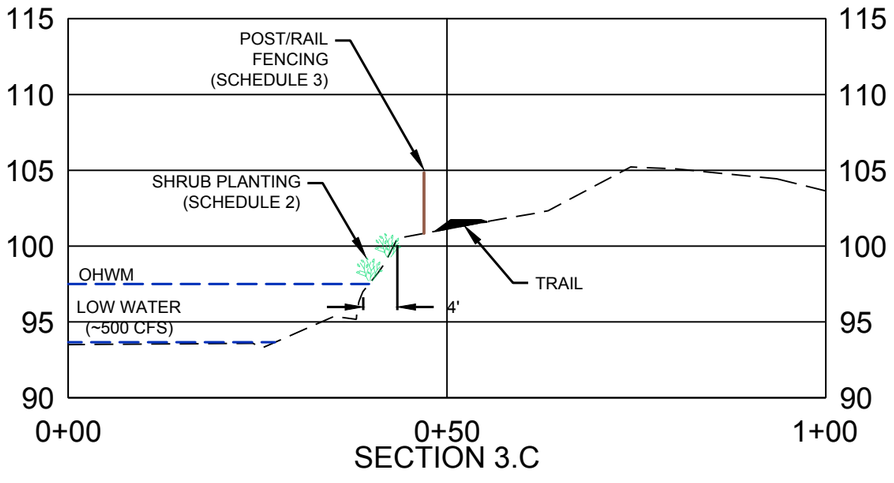
SHEET NUMBER:
11
SHEET 11



SECTION 3.A



SECTION 3.B



SECTION 3.C

0 10' 20'

SCALE: 1" = 20'
VERTICAL: 2X

LEGEND

- — — - EXISTING GROUND

SHRUB PLANTINGS (SCHEDULE 2)

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RIVER ACCESS
IMPROVEMENT -
PHASE 1

SITE 3
WILLOW PLANTING

SHEET NUMBER:
12
SHEET 12

WALK-IN ACCESS #2

4.B

GALLATIN RIVER

WALK-IN ACCESS #1

77'

SHRUB PLANTING 0.03 AC

44'

SHRUB PLANTING 0.01 AC

133'

TRAIL

POST AND RAIL FENCING

TRAIL

LEGEND

- 100 — DESIGN MAJOR CONTOUR
- — — DESIGN MINOR CONTOUR
- PROPOSED WOOD ROSE/SNOWBERRY (SCHEDULE 2)
- SUBAPLINE FIR PLANTING
- ROCKY MOUNTAIN JUNIPER PLANTING
- SNOWBERRY PLANTING
- WOOD'S ROSE PLANTING

N

0 10' 20'

SCALE: 1" = 20'

BASIS OF BEARING:
COMPASS AZIMUTH;
USING 15° DECLINATION

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_GRADING_P2.DWG
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RIVER ACCESS
IMPROVEMENT -
PHASE 2

SITE 4
UPLAND PLANTING

SHEET NUMBER:
13
SHEET 13

LEGEND

- 100 DESIGN MAJOR CONTOUR
- DESIGN MINOR CONTOUR
- PROPOSED SHRUB PLANTINGS (SCHEDULE 2)
- DF DOUGLAS FIR PLANTING
- J ROCKY MOUNTAIN JUNIPER PLANTING
- SN SNOWBERRY PLANTING
- WR WOOD'S ROSE PLANTING
- CI SHRUBBY CINQUEFOIL PLANTING

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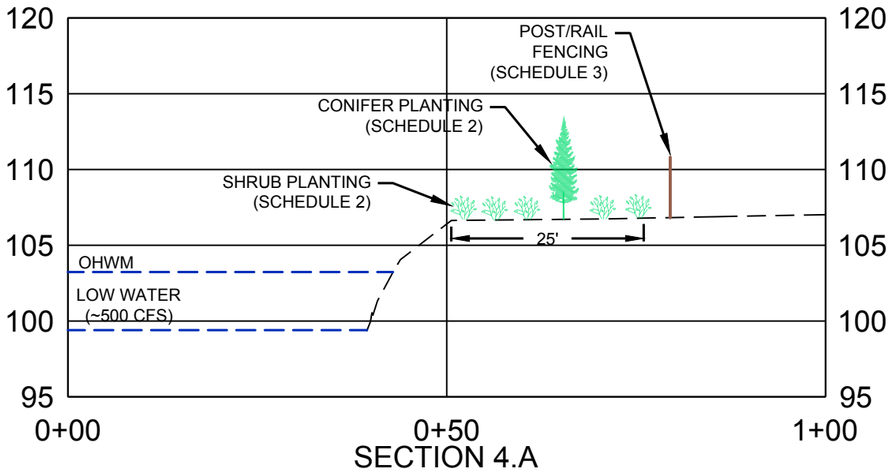
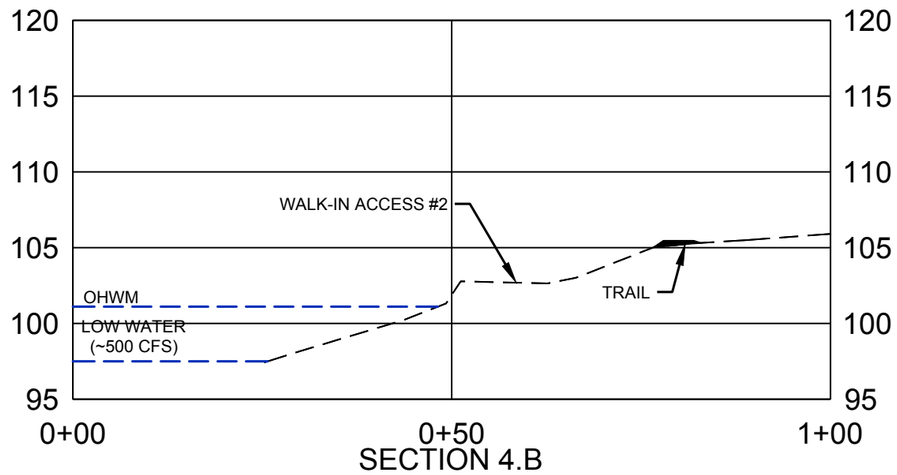
RIVER ACCESS
IMPROVEMENT -
PHASE 2

SITE 4
UPLAND PLANTING

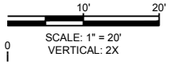
SHEET NUMBER:
14
SHEET 14



SECTION 4.A



SECTION 4.B



LEGEND

- - - - EXISTING GROUND

SHRUB PLANTINGS (SCHEDULE 2)

CONIFER PLANTINGS (SCHEDULE 2)

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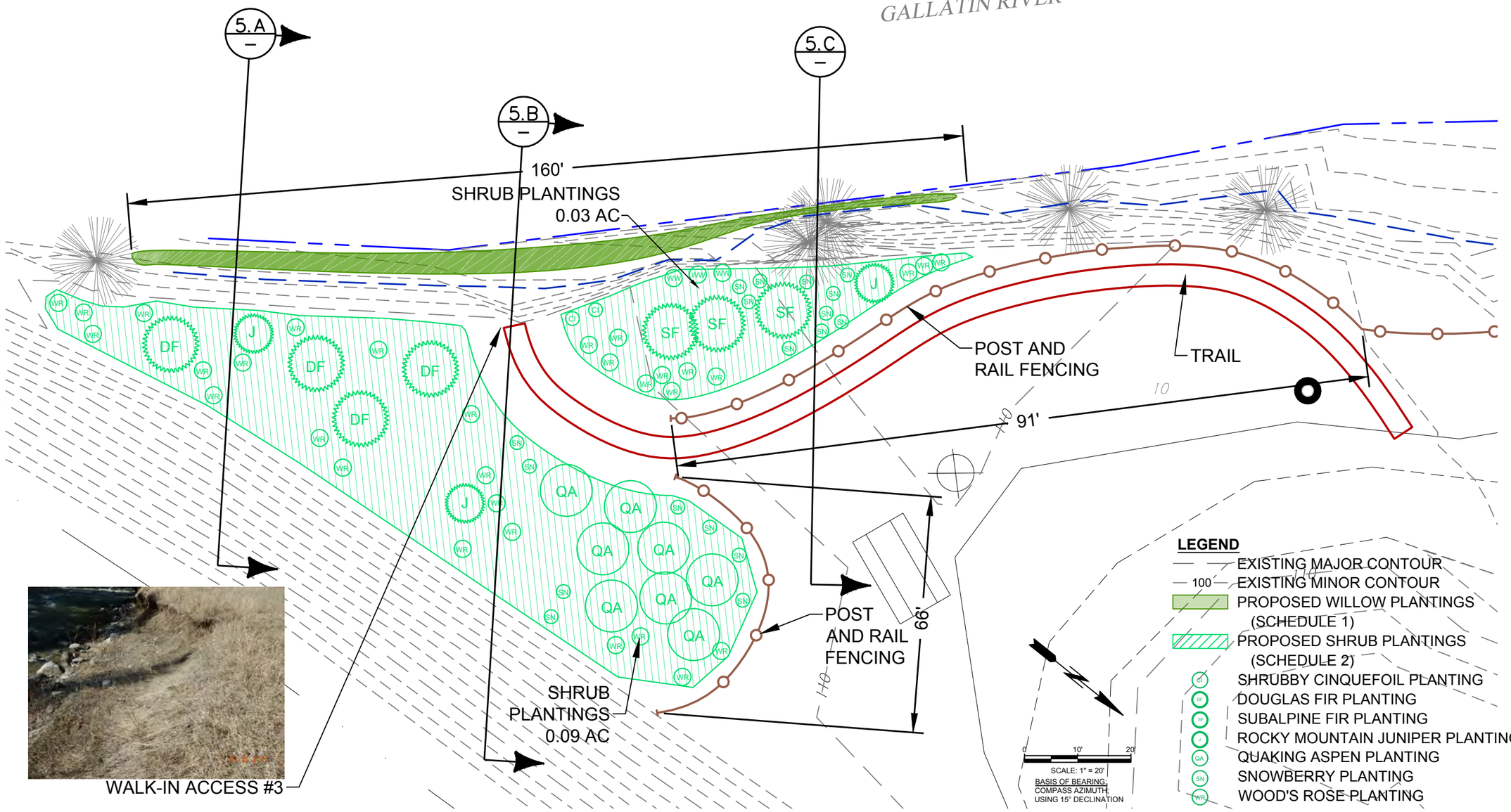
PHASE 1

SITE 4
UPLAND PLANTING

SHEET NUMBER:
15
SHEET 15



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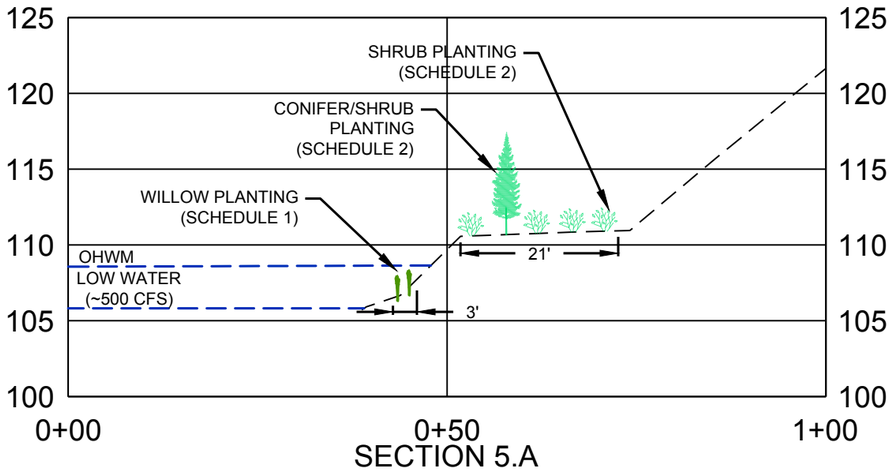
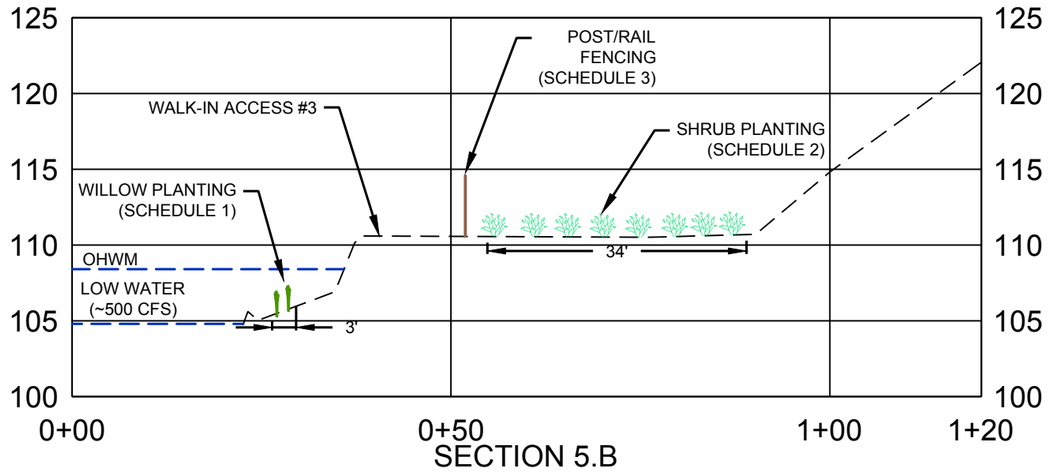
RIVER ACCESS
IMPROVEMENT -
PHASE 2

SITE 5
WILLOW AND SHRUB
PLANTING

SHEET NUMBER:
16
SHEET 16



SECTION 5.A



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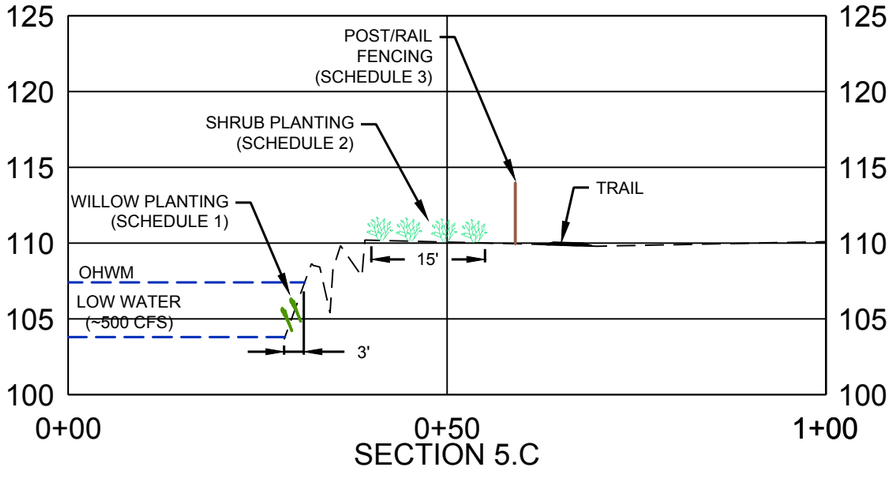

SECTION 5.C

0 10' 20'

SCALE: 1" = 20'
VERTICAL: 2X

LEGEND

- - - - EXISTING GROUND

WILLOW PLANTINGS (SCHEDULE 1)

SHRUB PLANTINGS (SCHEDULE 2)

CONIFER PLANTINGS (SCHEDULE 2)

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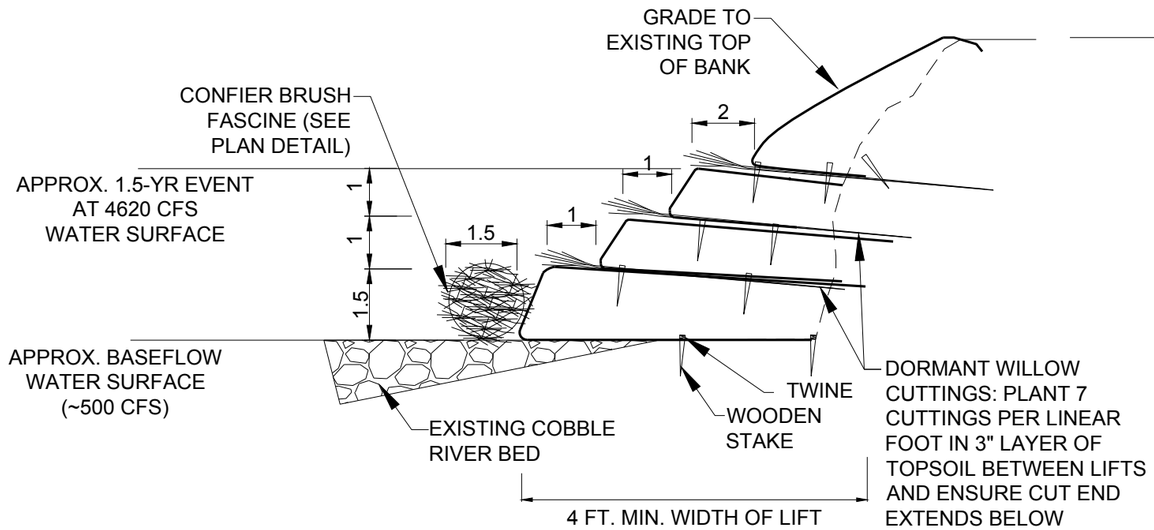
RIVER ACCESS
IMPROVEMENT -
PHASE 1

SITE 5
WILLOW AND SHRUB
PLANTING

SHEET NUMBER:
17
SHEET 17



UPPER BANK:

TIE-IN TO EXISTING GRADE AT TOP OF BANK (2:1 (H:V) MAX. GRADE)

UPPER BANK COMPOSED PRIMARILY OF NATIVE TOPSOIL AND GRAVEL. MATERIAL TO BE WRAPPED IN COCONUT (COIR) WOVEN EROSION CONTROL BLANKET OUTSIDE LAYER, AND NON-WOVEN COIR FABRIC INSIDE LAYER. SEED WITH NATIVE UPLAND SEED MIXTURE (SEE SPECIFICATIONS).

LOWER BANK:

3 - FABRIC ENCAPSULATED SOIL LIFTS (SEE DETAILS) TO BE COMPOSED OF NATIVE MATERIAL EXCAVATED DURING PHASE 1 ACTIVITIES ON-SITE. LOWERMOST LIFT COMPOSED PRIMARILY OF LOCALLY SOURCED COBBLE AND GRAVEL RANGING FROM APPROXIMATELY 2" TO 7" (BASED ON SURFACE PEBBLE COUNT DATA). UPPER LIFTS COMPOSED PRIMARILY OF NATIVE SOIL AND GRAVEL. MATERIAL TO BE WRAPPED IN COCONUT (COIR) WOVEN EROSION CONTROL BLANKET OUTSIDE LAYER, AND NON-WOVEN COIR FABRIC INSIDE LAYER. FACES OF LOWER AND UPPER LIFTS TO BE SEEDED WITH NATIVE RIPARIAN STREAMBANK MIX (SEE SPECIFICATIONS).

NOTES:

1. WOVEN COIR FABRIC MATERIAL TO BE 20 OZ/SY IN 9 FT WIDE ROLLS
2. NON-WOVEN COIR FABRIC MATERIAL TO BE 9.8 OZ/SY IN 8 FT WIDE ROLLS
3. NON-WOVEN STRAW FABRIC MATERIAL TO BE 8.7 OZ/SY IN 15.5 FT WIDE ROLLS
4. WOODEN STAKE MIN 18" WITH WIDER HEAD AT TOP, NORTH AMERICAN GREEN ECOSTAKE OR APPROVED EQUAL
5. BIODEGRADABLE TWINE MIN 3/5" DAIMETER

FABRIC ENCAPSULATED SOIL LIFT DETAIL

NOT TO SCALE, ALL DIMENSIONS SHOWN IN FEET

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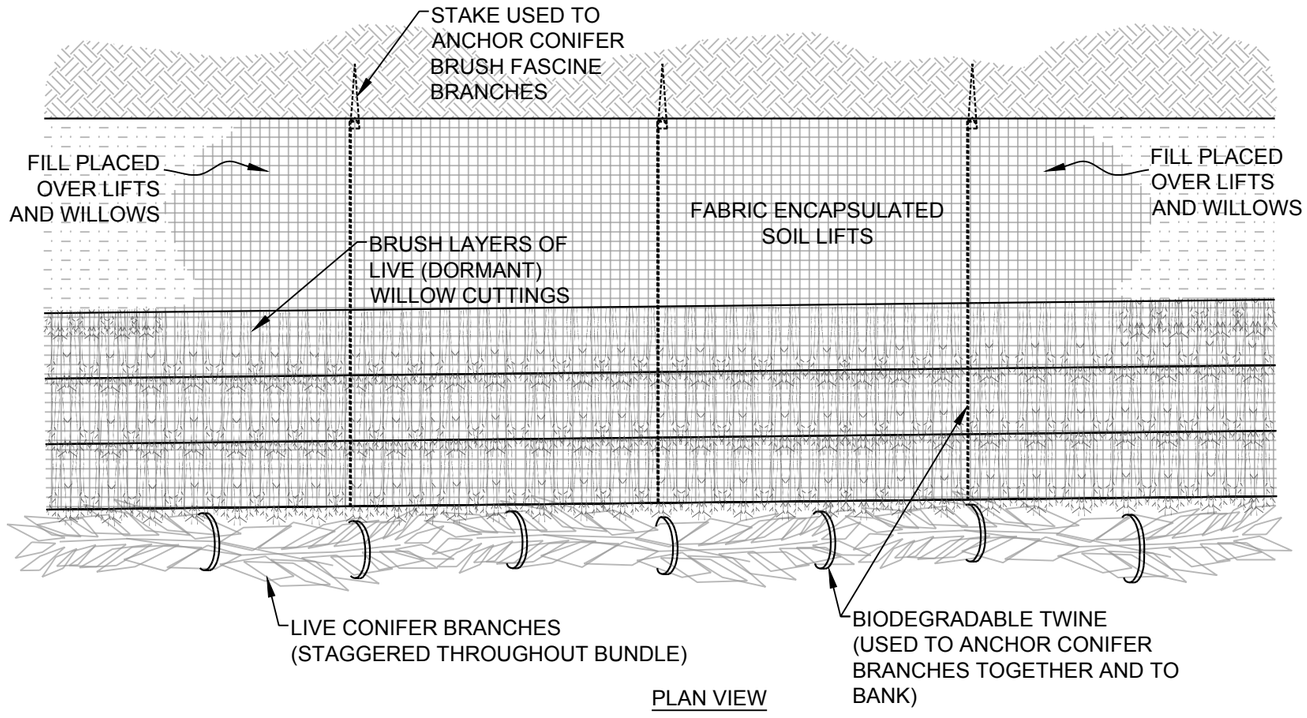
MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 2

FABRIC ENCAPSULATED SOIL LIFT DETAIL

SHEET NUMBER: 18

SHEET 18



PLAN VIEW

FABRIC ENCAPSULATED SOIL LIFT WITH CONIFER BRANCH FASCINE

NOT TO SCALE

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FABRIC ENCAPSULATED SOIL LIFT DETAIL

SHEET NUMBER:
19
SHEET 19

STREAMBANK BIOENGINEERING

VEGETATED SOIL LIFTS

1. TO CONSTRUCT A VEGETATED SOIL LIFT, SOIL IS WRAPPED WITHIN TWO LAYERS OF BIODEGRADABLE COIR FABRIC TO CREATE A 12-INCH LAYER OF STABILIZED VEGETATED MEDIA.
2. TO ENSURE SURFACE TENSION IS MAINTAINED WHERE THE CONSTRUCTED BANK RECEIVES THE GREATEST HYDRAULIC STRESS, THE FACE OF THE BOTTOM SOIL LIFT WILL BE REINFORCED WITH A CONIFER BRUSH FASCINE PLACED IN FRONT OF THE LIFT AT THE LOW WATER LEVEL.
3. THE LOWER VEGETATED SOIL LIFT WILL BE CONSTRUCTED ON THE EXISTING COBBLE IN THE CHANNEL BASED ON SITE-SPECIFIC CONDITIONS AS DESCRIBED IN THE CONSTRUCTION DRAWINGS AND UNDER DIRECTION FROM THE ONSITE PROJECT MANAGER.
4. VEGETATED SOIL LIFTS WILL BE ANCHORED IN PLACE USING WOODEN STAKES DRIVEN IN WITH THE TIP TOWARD THE CHANNEL TO MAINTAIN TENSION IN THE BIODEGRADABLE COIR FABRIC WRAP.
5. A SECOND VEGETATED SOIL LIFT WILL BE CONSTRUCTED ON TOP OF THE FIRST WITH A THIN LAYER OF TOPSOIL AND DORMANT WILLOW CUTTINGS (7-8/LINEAL FOOT) PLACED BETWEEN THE LIFTS EXTENDING HORIZONTALLY INTO THE STREAM CHANNEL. WILLOW CUTTINGS ARE TO BE PLACED BETWEEN THE LIFTS AND THE LIFTS SHOULD BE CONSTRUCTED AT A DOWNWARD ANGLE INTO THE BANK TO PROVIDE THE WILLOW CUTTINGS ACCESS TO PERENNIAL WATER.
6. THE SECOND LIFT WILL BE PLACED 1-FOOT BACK FROM THE EDGE OF THE LOWER LIFT.
7. THE UPPERMOST SOIL LIFT SHOULD BE FILLED WITH SUITABLE SOIL MEDIA AND EITHER CAPPED WITH THE STREAMBANK SEED MIX OR CAPPED WITH SOD.
8. THE UPSTREAM AND DOWNSTREAM ENDS SHOULD BE ANCHORED, KEYED, OR OTHERWISE TIED INTO THE EXISTING STREAMBANKS WITH OVERLAPPING (SHINGLING) OF MATERIALS AS NECESSARY TO PREVENT FLANKING OR DISLODGING.
9. PRIOR TO CONSTRUCTING THE VEGETATED SOIL LIFTS, THE CONIFER BRUSH FASCINES, WHICH ARE BUNDLES OF FRESHLY HARVESTED CONIFER BRANCHES, WILL BE BOUND TOGETHER TO CREATE A LOG-LIKE STRUCTURE. THEY ARE CONSTRUCTED USING UNTRIMMED CONIFER BRANCHES AND SMALL TREES, RANGING FROM 4 TO 8 FEET IN LENGTH, BOUND TOGETHER USING BIODEGRADABLE TWINE TO CREATE 6- TO 10-FOOT LONG BUNDLES WITH A MINIMUM 12-INCH DIAMETER. A FEW OF THE THINNER WILLOW BRANCHES CAN ALSO BE INTERTWINED WITHIN THE CONIFER BRUSH FASCINES.
10. THE BUNDLES ARE TO BE LAID END TO END IN FRONT OF THE LOWER LIFT FOR THE LENGTH OF THE TREATMENT WITH THE OVERLAPPING ENDS BEING BOUND TOGETHER WITH TWINE. THERE SHOULD BE APPROXIMATELY THREE FEET OF OVERLAP, WITH THE DOWNSTREAM BUNDLE PLACED TO THE INSIDE OF THE UPSTREAM BUNDLE.
11. BIODEGRADABLE TWINE WRAPPED AROUND THE FASCINE WILL THEN BE ATTACHED TO WOODEN STAKES DRIVEN INTO THE GROUND AT THE BACKSIDE OF THE VEGETATED SOIL LIFT.

WILLOW CUTTINGS

HARVESTING WILLOWS CUTTINGS FOR USE IN BIOENGINEERED STREAMBANKS

1. ONLY CERTAIN SPECIES CAN GENERATE FROM CUTTINGS: SANDBAR WILLOW, BEBB WILLOW, BOOTH WILLOW, DRUMMOND WILLOW AND GEYER WILLOW.
2. CUTTINGS TO BE UTILIZED FOR LIVE PLANTING WILL BE HARVESTED FROM STANDS LOCATED NEAR THE PROJECT SITE THAT ARE HEALTHY STANDS INSPECTED FOR DAMAGE FROM INSECTS OR DISEASE.
3. THE CUTTINGS SHOULD GENERALLY BE ½ TO 1 INCH IN DIAMETER AND LENGTH WILL VARY DEPENDING ON THE DIFFERENT SPECIFIED TREATMENT BUT TYPICALLY 5 TO 8 FEET LONG FOR LAYERING IN THE SOIL LIFTS AND 4 TO 6 FEET FOR WILLOW STAKES.
4. TYPICALLY FOR THE LAYERING TREATMENTS THE WILLOWS DO NOT NEED TO BE TRIMMED, THOUGH THE APICAL MERISTEM SHOULD BE PRUNED FOLLOWING INSTALLATION. FOR INSTALLATION VERTICALLY INTO THE BANKS, WILLOW STAKES SHOULD BE TRIMMED (I.E. SMALL BRANCHES, TWIGS REMOVED) SO THAT ONLY 1/3 OF THE WILLOW STAKE IS ABOVE THE GROUND.
5. LOPPING SHEARS, PRUNING SHEARS, A SMALL WOOD SAW, OR A BRUSH CUTTER CAN BE USED TO HARVEST CUTTINGS.
6. USE LIVE WOOD AT LEAST 2 YEARS OLD OR OLDER. VERY OLD WOOD SHOULD NOT BE USED. THE BEST WOOD IS 2 TO 7 YEARS OLD WITH SMOOTH BARK WHICH IS NOT SPLIT OR DEEPLY FURROWED.
7. AVOID WHIPS OR SUCKERS (CURRENT YEAR'S GROWTH) BECAUSE THEY LACK THE STORED ENERGY RESERVES NECESSARY TO CONSISTENTLY SPROUT WHEN PLANTED.
8. NO MORE THAN 1/3 OF ANY INDIVIDUAL PLANT SHOULD BE REMOVED. IN THE CASE OF RHIZOMATOUS SPECIES, NO MORE THAN 40 TO 50% OF THE STAND SHOULD BE REMOVED.
9. SELECT BRANCHES WHICH ARE FREE OF INSECTS OR DISEASE.
10. IMMEDIATELY FOLLOWING HARVESTING, ALL WILLOW CUTTINGS WILL BE BUNDLED IN GROUPS OF 20 FOR EASE OF COUNTING AND DISTRIBUTION.
11. ALL CUTTINGS HARVESTED IN THE SPRING WILL BE SOAKED FOR 7 TO 14 DAYS PRIOR TO INSTALLATION. CUTTINGS WILL BE HARVESTED DURING PLANT DORMANCY BEFORE THE SPRING BUD BREAK (TYPICALLY PRIOR TO APRIL 15) OR THE FALL (AFTER LEAF FALL IN LATE OCTOBER).
12. SOAKING CAN BE ACCOMPLISHED IN A DITCH, STREAM, POND OR OTHER BODY OF FLOWING WATER THAT IS DEEP ENOUGH TO COMPLETELY COVER THE CUTTINGS.
13. IF DORMANT WILLOW CUTTINGS ARE INSTALLED IN THE FALL, THE WILLOW CUTTINGS DO NOT REQUIRE SOAKING PRIOR TO PLANTING ALTHOUGH IT DOES NOT HARM THE STEM IF SOAKED.

VERTICAL WILLOW INSTALLATION

1. THE PLANTING DIRECTION WILL BE THE SAME AS DURING GROWTH (I.E. BUDS POINT UPWARD).
2. CUTTINGS CAN BE INSTALLED USING A 5 TO 6-FOOT LONG EXCAVATOR-MOUNTED DIBBLE BAR, SOIL AUGERS, A WATERJET STINGER, PLANTING BARS, OR BY PUSHING THE CUTTINGS INTO MOIST SOIL BY HAND.
3. THE RECOMMENDED INSTALLATION METHOD IS THE EXCAVATOR MOUNTED DIBBLE BAR DUE TO THE DIFFERENT BANK DEPTHS AND INSERTION THROUGH EROSION CONTROL FABRIC. THE PLANTING DEPTH AND TREATMENT WILL DETERMINE THE PLANTING METHODS.
4. WILLOW CUTTINGS WILL BE PLANTED ON TOP OF BANK DEPENDING UPON THE SPECIFIED BANK TREATMENT. CUTTINGS WILL BE INSERTED DEEP ENOUGH TO REACH THE LOW OR MID-SUMMER WATER TABLE AS FOLLOWS:
   a. AT LEAST 6 INCHES OF THE CUTTING ARE IN THE LOW WATER TABLE.
   b. 3 TO 4 BUDS ARE ABOVE THE GROUND SURFACE ELEVATION.
   c. 1 TO 4 CUTTINGS CAN BE PLACED SMALL CLUSTERS IN EACH HOLE.
5. IF WEEDS OR TALL INVASIVE GRASSES ARE A CONCERN, THE CUTTINGS SHOULD EXTEND ABOVE THE HERBACEOUS GROWTH TO RECEIVE ADEQUATE LIGHT AND BELOW THE HERBACEOUS ROOT MASS TO MINIMIZE COMPETITION.
6. IT IS ESSENTIAL TO HAVE GOOD CONTACT BETWEEN CUTTINGS AND SOIL FOR ROOTS TO SPROUT. AIR POCKETS AROUND THE CUTTINGS WILL KILL THE ROOTS.
7. ADDITIONAL SOIL OR SAND MAY BE SEEDED TO ENSURE GOOD SOIL TO STEM CONTACT. PREFERENCE SHOULD BE GIVEN TO NATIVE SOIL NEARBY TO ENCOURAGE MYCORRHIZAL FORMATION AND/OR NODULE FORMATION BY NITROGEN-FIXING ORGANISMS.
8. MUD OR “WATER-IN” THE CUTTINGS AFTER THEY ARE PLACED IN THE HOLE. USE THE EXCAVATOR BUCKET (FOR WATER) FOLLOWED BY PLACEMENT OF SOIL AS NEEDED.
9. FOLLOWING INSTALLATION, VERTICALLY INSTALLED WILLOWS WILL LIKELY REQUIRE TRIMMING, I.E. THE TOPS CUT OFF SO THAT ONLY 1/3 OF THE WILLOW CUTTINGS IS ABOVE GROUND. THIS WILL VARY BASED ON THE CUTTING LOCATION AND BANK TREATMENT. THIS CAN EASILY BE DONE BY USING LONG-HANDLED LOPPERS.
10. CLEAN-UP WOULD REQUIRE EITHER TOSSING THE CUT STEMS INTO THE WATER OR IN BUCKETS OR BAGS FOR REMOVAL OR PLACEMENT AS WOODY DEBRIS WITHIN THE FLOODPLAIN.

CONTAINERIZED PLANTINGS

1. ENGELMANN SPRUCE WILL BE PLANTED WITH 10-FOOT SPACING.
2. WILLOWS AND SHRUBS WILL BE PLANTED WITH 6-FOOT SPACING.
3. THE DESIGNER WILL IDENTIFY THE PLANTING LOCATION, DENSITY AND SPECIES FOR EACH PROJECT AREA BY USING PLANT SYMBOL CODED PIN FLAGS, LATH OR OTHER APPROPRIATE MEANS.
4. THE PLANTING HOLES WILL BE DONE EITHER BY HAND OR WITH AN AUGER (THIS IS THE PREFERRED METHOD ESPECIALLY FOR LARGER NURSERY STOCK). A 6" AUGER MOUNTED TO A MINI TRACTOR EXCAVATOR IS THE IDEAL SIZE.
5. TO ASSESS SOIL MOISTURE AND HYDROLOGY, THE PLANTING HOLE SHOULD BE LEFT OPEN FOR 24 HOURS. IF HYDROLOGY IS NOT CONDUCIVE TO SUPPORT PLANT GROWTH (TOO DRY FOR WILLOWS), THE HOLE MAY BE FILLED AND ANOTHER HOLE DUG IN THE SAME VICINITY OR THE IDENTIFIED/MARKED FOR SUPPLEMENTAL IRRIGATION.
6. PRIOR TO PLANTING, ALL CONTAINERIZED PLANTS WILL BE FULLY PROTECTED FROM SEVERE WEATHER (TARPS, STORAGE BUILDINGS OR PROTECTIVE BOXES). THERE SHOULD BE COORDINATED DELIVERY SCHEDULING TO AVOID HAVING CONTAINERIZED PLANTS LEFT OUT.
7. UPON ARRIVAL, ALL PLANT MATERIALS WILL BE INSPECTED FOR GENERAL HEALTH AND TO ENSURE THAT THE CONTAINERIZED SOIL IS WEED FREE. PLANTS WILL NOT BE ACCEPTED IF THEY ARE DAMAGED OR UNSUITABLE.
8. PLANTING WILL NOT BE DONE IN SOIL THAT IS FROZEN, EXCESSIVELY WET, OR OTHERWISE IN A CONDITION NOT SATISFACTORY FOR PLANTING IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICE.
9. FOR TREES, ROOTS ON ROOT BOUND PLANTS WILL BE SCORED OR RIPPED 1/4 TO 1/2 INCH DEEP ON THE EDGES OF THE ROOT BALL. THE PLANTING HOLE WILL BE DUG APPROXIMATELY 50 PERCENT WIDER AND 25 PERCENT DEEPER THAN THE CONTAINER. THE BOTTOM OF THE HOLE WILL BE BACKFILLED BY HAND TO A DEPTH EQUAL TO THE HEIGHT OF THE CONTAINER.
10. INSERT THE TREE INTO THE CENTER OF THE PIT AND SET SO THAT THE TOP OF ROOT BALL IS APPROXIMATELY PLUMB TO THE FINAL GRADE (I.E., AT THE SAME DEPTH AT WHICH IT WAS GROWN) FOR THE CONTAINERIZED WILLOWS AND SHRUBS. FOR CONTAINERIZED CONIFERS, INSERT THE TREE INTO THE CENTER OF THE PIT AND SET SO THAT TOP OF ROOT BALL IS 1 TO 2 INCHES ABOVE THE FINAL GRADE TO ACCOUNT FOR SETTLING. IF THE PIT IS MISTAKENLY DUG TOO DEEP, SAND OR CLEAN BACKFILL SHALL BE UTILIZED TO COMPENSATE FOR THE PROPER ELEVATION.
11. AFTER THE PLANT IS STABILIZED, BACKFILL AND CAREFULLY WORK SOIL AROUND AND OVER THE PLANT ROOTS AND THOROUGHLY SETTLE BY FIRMING AND HAND TAMPING UNTIL THE PIT IS BROUGHT UP TO FINISHED GRADE. FIRMING THE SOIL AROUND THE TREE SHALL BE DONE IN A MANNER TO ASSURE NO DAMAGE IS DONE TO THE TREE OR ROOT SYSTEM. EXCESS SOIL MATERIAL WILL BE USED TO CONSTRUCT A LOW BERM AROUND THE PLANT TO AID IN MOISTURE RETENTION.
12. THE ORIGINAL SOIL FROM THE HOLE WILL BE FILLED IN AND FIRMED AROUND THE PLANT ROOTS OR PLUG. SOIL WILL BE FILLED IN AND FIRMED PROGRESSIVELY SO NO LOOSE SOIL OR AIR POCKETS REMAIN AND THE TREE OR SHRUB IS AS FIRMLY PLANTED AS SOIL CONDITIONS WILL ALLOW. EXCESS SOIL MATERIAL WILL BE USED TO CONSTRUCT A “WATER WELL” (LOW BERM) AROUND THE PLANT TO AID IN MOISTURE RETENTION. ALL PLANTS SHALL BE “WATERED IN” FOLLOWING PLANTING.

JD/MJ/MR — DESIGNED
JR — DRAWN
JD/MJ/MR — CHECKED
10/2017 — DATE

3810 VALLEY COMMONS DR.
SUITE 4
BOZEMAN, MT 59718
PHONE (406) 284-2525

REVISION

RESPEC

811 Know what's below. Call before you dig.

GALLATIN RIVER TASK FORCE
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT
RIVER ACCESS
IMPROVEMENT -
PHASE 2

PLANTING NOTES

SHEET NUMBER:
20
SHEET 20

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_DETAIL_P2.DWG
PLOT DATE: October 10, 2017 10:56 AM, BY: LIBBY ELLWOOD

13. INDIVIDUAL BROWSE PROTECTION OR LARGE BROWSE ENCLOSURES WILL BE INSTALLED AROUND THE PLANTINGS AS NECESSARY, TO PROTECT THE NEW TREES AND SHRUBS FROM DAMAGE CAUSED BY DEER, MOOSE OR OTHER MAMMALS DURING EARLY ESTABLISHMENT. RIGID MESH BROWSE PROTECTORS WILL BE CONSTRUCTED USING WOVEN WIRE OR POLYETHYLENE FENCE SECURED AROUND THE PLANTS TO T-POSTS OR STAKES.

14. IF INDIVIDUAL BROWSE PROTECTORS ARE USED, EACH PLANT WILL RECEIVE A TUBEX VOLE GUARD TO PROTECT FROM MICE OR VOLES GIRDLING THE PLANT BASE. INDIVIDUAL BROWSE PROTECTORS SHOULD BE 4 FEET IN HEIGHT AND CONSTRUCTED FROM RIGID PLASTIC NETTING. THE NETTING IS SECURED IN PLACE WITH 2-INCH SQUARE BY 4-FOOT TALL WOODEN POSTS AND UV STABILIZED ZIP TIES. TWO POSTS SHOULD BE USED FOR EACH PLANT AND SPACED A MINIMUM OF 12 TO 18 INCHES APART.

15. EACH PLANT WILL RECEIVE A TWO-FOOT BY TWO-FOOT WEED CONTROL MAT AROUND THE BASE OF THE PLANT OR A 2- TO 4-INCH LAYER OF ORGANIC MULCH AROUND THE BASE OF THE PLANT TO REDUCE COMPETITION FROM AGGRESSIVE GRASSES.

DESIGNED JD/MJ/MR
DRAWN JR
CHECKED JD/MJ/MR
DATE 10/2017

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PHONE (406) 284-2525

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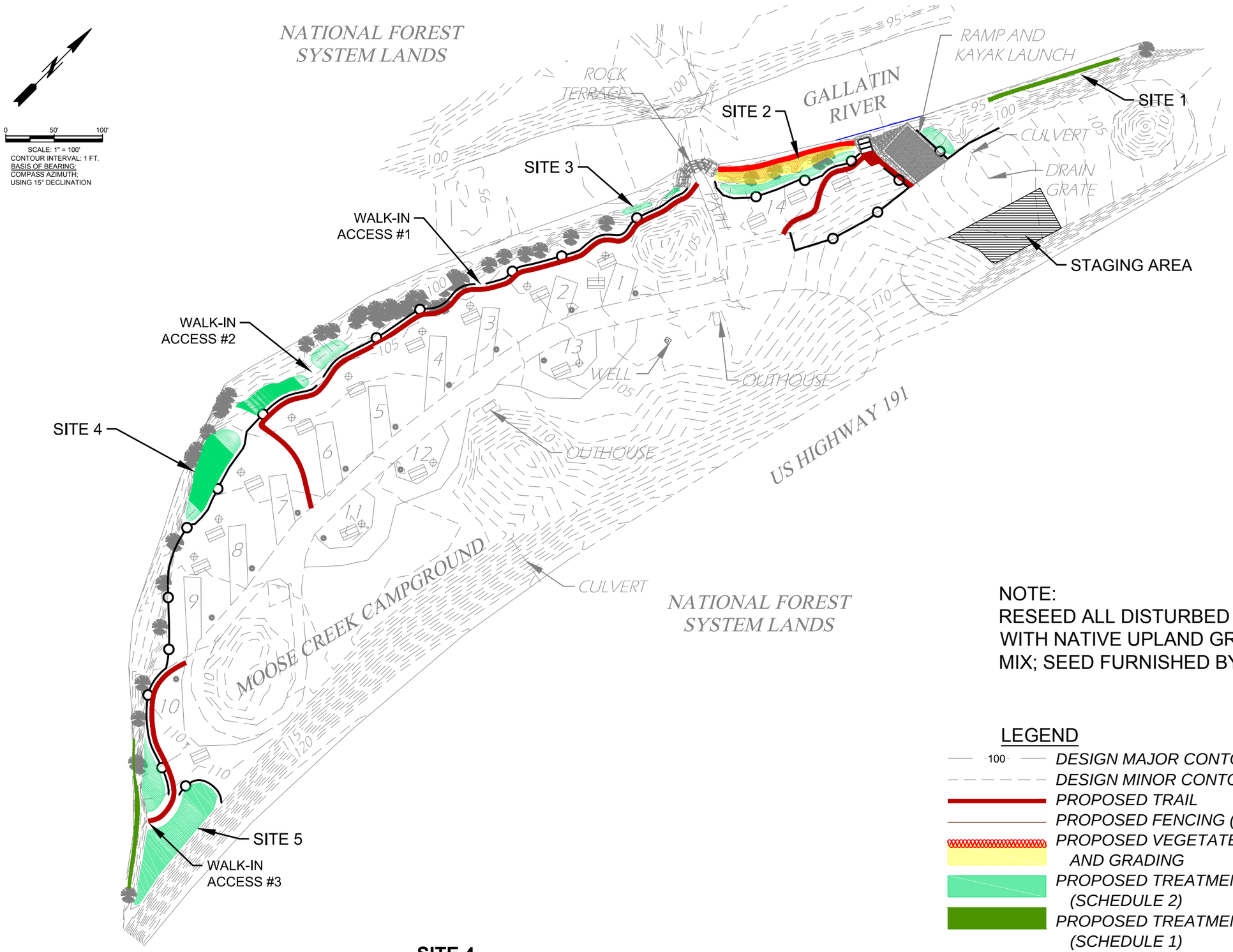
PO BOX 160513
BIG SKY, MT 59716

MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 2

PLANTING NOTES

SHEET NUMBER:
21
SHEET 21

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_DETAIL_P2.DWG
PLOT DATE: October 10, 2017 10:56 AM, BY: LIBBY ELLWOOD



SITE 4

NOTE:
RESEED ALL DISTURBED AREAS WITH NATIVE UPLAND GRASS MIX; SEED FURNISHED BY USFS

LEGEND

- 100 — *DESIGN MAJOR CONTOUR*
- *DESIGN MINOR CONTOUR*
- *PROPOSED TRAIL*
- *PROPOSED FENCING (SCHEDULE 3)*
- *PROPOSED VEGETATED SOIL LIFT AND GRADING*
- *PROPOSED TREATMENT AREA (SCHEDULE 2)*
- *PROPOSED TREATMENT AREA (SCHEDULE 1)*

NAME: S:\PROJECTS\02870 - GRTF - MOOSE FLAT\CAD\SHEETS\02605_S_SED_EROSION.DWG
PLOT DATE: October 10, 2017 11:03 AM, BY: LIBBY ELLWOOD

REVISION	DESIGNED	DRAWN	CHECKED	DATE
	JD/MJ/MR	JR	JD/MJ/MR	10/2017

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MOOSE CREEK FLAT RIVER ACCESS IMPROVEMENT - PHASE 2

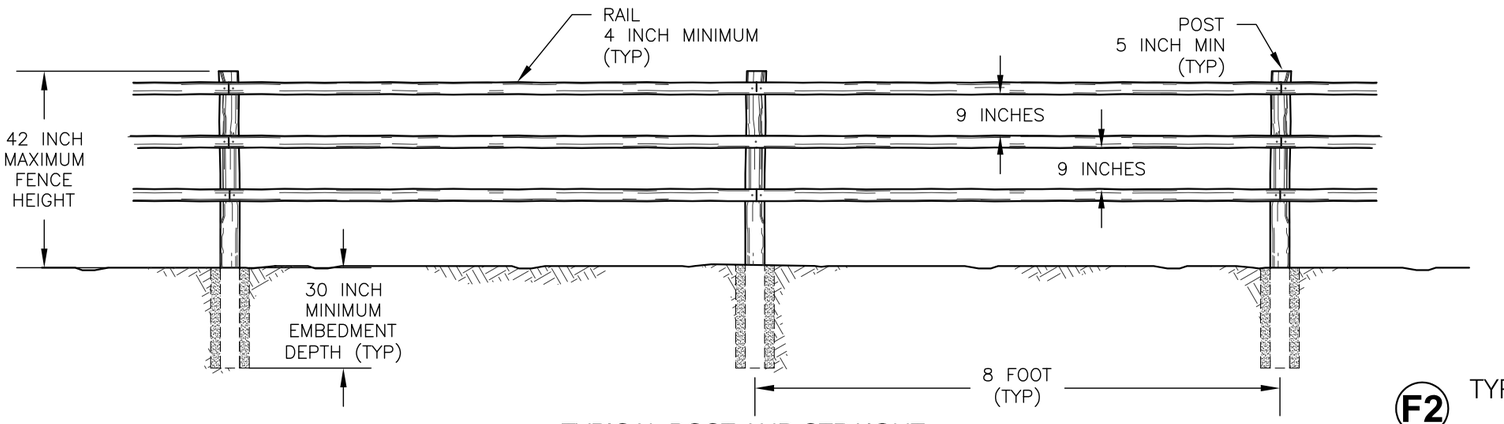
SEDIMENT/EROSION CONTROL AND REVEGETATION PLAN

SHEET NUMBER:
22
SHEET 22

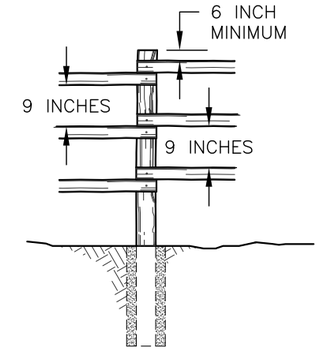
POST AND RAIL FENCE

	FENCE		POST							RAIL				
TYPICAL ID	TYPE	HEIGHT	TYPE	SIZE	LENGTH (FEET)	SPACING (FEET)	EMBEDMENT DEPTH	PRESERV. TYPE	POST CONNECTION DETAIL	TYPE	SIZE	LENGTH (FEET)	PRESERV. TYPE	COMMENTS
PRF–1								P					P	

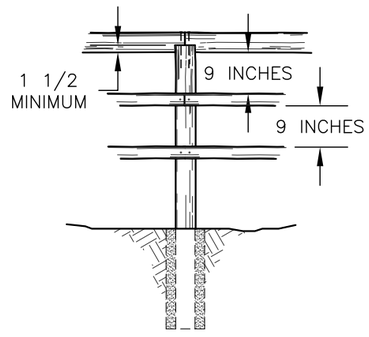
N/A WHEN NOT APPLICABLE



F1 TYPICAL POST AND STRAIGHT RAIL FENCE SECTION



F2 TYPICAL POST AND STACKED RAIL FENCE SECTION



F3 TYPICAL POST WITH TOP RAIL FENCE SECTION

NOTES:

1. REFER TO THE PUBLICATION "FENCES" PREPARED BY THE MISSOULA TECHNOLOGY AND DEVELOPMENT CENTER FOR ADDITIONAL CONSTRUCTION DETAILS AND INSTALLATION PROCEDURES.
2. FENCE AND GATE LOCATIONS AS STAKED IN THE FIELD.
3. PRE–DRILL HOLES FOR FASTENERS TO PREVENT SPLITTING OF BRACING OR POSTS.
4. COMPACT AND BACKFILL POST HOLES IN 6 INCH LIFTS UNTIL NO VISUAL DISPLACEMENT.

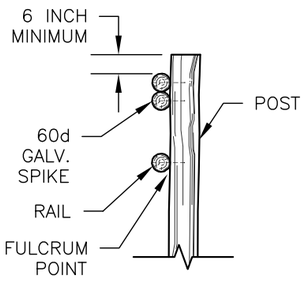
PRESERVATIVE TREATMENT – (REFER TO AWPA USE CATEGORY SYSTEM)			
PRESERVATIVE TYPE	TREATMENT TYPE	USE CATEGORY	COMMENTS
P1	WB	UC4A	
P2	WB	UC3B	
P3			

TREATMENT TYPE

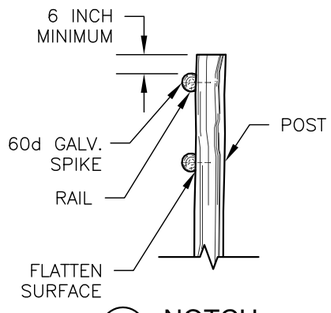
WB = WATERBORNE
OT = OIL–BORNE

USE CATEGORY

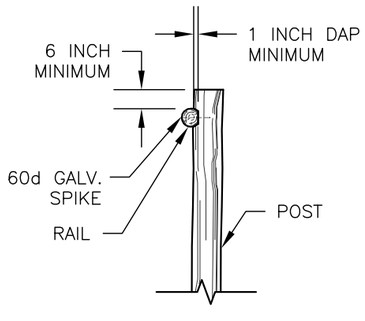
UC3B = ABOVE GROUND – EXPOSED
UC4A = GROUND CONTACT – GENERAL USE
UC4B = GROUND CONTACT – HEAVY DUTY



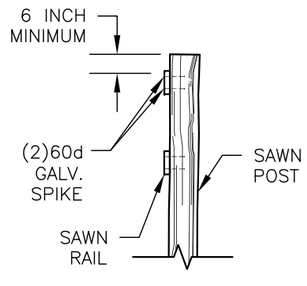
A SPIKE DETAIL



B NOTCH DETAIL



C DAP DETAIL



D SAWN LUMBER DETAIL

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

PROJECT NAME & LOCATION

DRAWING NAME
POST AND RAIL FENCE

SECTION
941 - FENCES

TYPICAL ID
PRF

REVISION DATE
XX/XX/XX

NOT TO SCALE

DRAWING NO.
STD_941-20-01

SHEET
OF